Institutional Controls Tracking Systems Workshop
October 28-30, 2002
Washington, DC

Purpose

The purpose of this workshop was to draft an action plan to create a national Institutional Controls (IC) tracking system network, and to identify the people responsible for taking those actions.

Listed below are the workshop participants.

Amy Edwards, Holland & Knight LLP
Angela Atkins, U.S. Army, Office of Environmental Programs
Arnold Gray, Earthsoft Inc.
Betsy Southerland, U.S. Environmental Protection Agency (EPA)/Office of Emergency and Remedial Response (OERR)
Bob Fitzgerald, EPA Region 9
Brooks Koenig, Oregon Department of Environmental Quality
Carlos M. Lago, EPA Office of Solid Waste (OSW)
Cheryl Runyan, National Conference of State Legislatures
Chris Dunn, URS Corp.
Craig Huber, Argonne National Laboratory
David Borak, International City/County Managers Association (ICMA)
Dawn Jakutowicz, URS Corp.
Dennis Farrar, New York Department of Conservation
Donald Bruce, EPA Region 5
Elaine Warren, City of San Francisco
Fred Lombardo, U.S. Army Corps of Engineers (USACE)
Gary Behrns, Missouri Department of Natural Resources
George H. Klein, New Jersey Department of Environmental Protection
Glenn Curtis, EPA Region 7
Greg Jordan, EPA/Office of Brownfields Cleanup and Redevelopment (OBCR)
J. Thomas Leaver, Pennsylvania Department of Environmental Protection
Jake Jacobsen, Idaho National Engineering and Environmental Laboratory (INEEL)
Jay Pendergrass, Environmental Law Institute (ELI)
Joe Vescio, EPA Office of Underground Storage Tanks (OUST)
Joe Schilling, ICMA
John Frisco, EPA Region 2
John Stewart, U.S. Department of Energy (DOE)
John Swartwout, New York Department of Conservation
John Bascietto, DOE
John DeFina, New Jersey Department of Environmental Protection

Kelly Romeo, American Land Title Association (ALTA)
Kenneth Schefski, EPA Office of Enforcement and Compliance Assurance (OECA)
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Marcia Carpentier, ICMA
Marilyn Tolbert-Smith, DOE
Mike Bellot, EPA/OERR
Nancy Kosko, United States Army Environmental Center
Ned Burke, City of Denver
Patrick McCutcheon, Wisconsin Department of Natural Resources
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Richard Engel, U.S. Navy Facilities Engineering
Rick Bean, Kansas Department of Health
Robert Stout, Missouri Department of Natural Resources
Robert Hersh, Center for Public Environmental Oversight (CPEO)
Robert Cribbin, USACE
Roy Tan, Parsons Corporation
Steve Johnson, Delaware Department of Natural Resources and Environmental Conservation
Tim Kent, Quapaw Tribe of Oklahoma
Wren Stenger, EPA Region 6
Tim Underwood, KPMG LLP
Lori Maher, DPRA Inc.
Maureen Findorff, Marasco-Newton Group (MNG)
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Jenifer Grabski, DynCorp LLC
Keith Hagg, DynCorp LLC
Matthew Hayduk, DynCorp LLC
Sa'ad Masri, DynCorp LLC
Stephen Merrill Smith, DynCorp LLC

Presentations

Workshop Welcome

Elizabeth Southerland, PhD, Deputy Director EPA/OERR and Mike Bellot, EPA/OERR welcomed the participants to the Fall 2002 IC Tracking System Workshop.

In recent years, EPA's Superfund program has turned its attention to actions taken at Superfund sites following the construction of the remedy. EPA has committed significant time and resources to making Institutional Controls a top priority. Institutional Controls (ICs) are vital to

the continued protection of human health and the environment at a multitude of sites where remedial construction and cleanup actions are underway or have been completed. ICs are the barriers that block human and environmental exposure pathways to contamination. Consequently, there is a great need to coordinate IC tracking on a national basis to ensure the integrity and effectiveness of Superfund remedies and the remedies of many other EPA and state cleanup programs.

This work is being done to fulfill EPA Assistant Administrator Marianne Horinko's goal of one, integrated cleanup program. The achievement of this goal will involve incorporating the different statutory requirements of each program into a streamlined, coherent process. An IC tracking system is seen as the pioneering effort towards this merger, and a logical first step, due to the similarity of each cleanup program's IC regulations and statutes.

EPA has made substantial efforts to involve stakeholders in the development of an IC tracking system. A series of seven focus groups was held during the summer and early fall of 2002 to initiate discussions on the creation of such a tracking system. Each group was asked similar questions geared toward discovering which groups find what elements essential for inclusion in an IC tracking system.

Update on Lessons Learned from IC focus groups

Joe Vescio, EPA Headquarters
On June 5, 2002 EPA conducted a focus group at EPA Headquarters in Washington, DC with staff from EPA cleanup programs. This group comprised representatives from the RCRA , Federal Facilities, Superfund, Brownfields, and Underground Storage Tanks programs, who voiced their concerns addressing legal, scientific, and policy issues. EPA was already placing considerable emphasis on coordinating all the programs into an integrated "one cleanup program." Transition to the "one cleanup program" would utilize existing management infrastructure to the greatest extent possible, allowing for differences in program management delegation and statutory requirements. Participants at the meeting placed emphasis on achieving the most effective and productive coordination of efforts to collect IC data, as well as on the development of an Agency guidance. The group recognized the importance of state, local, and tribal participation in the IC tracking effort, which is essential to ensure that ICs are effective and consistently documented.

Gary Behrns, Missouri Department of Natural Resources
On June 18-19, 2002, representatives from various states met at the Hall of States in Washington, D.C., to discuss the benefits and drawbacks of IC tracking systems being used by the states of New York, Delaware, Florida, Missouri, New Jersey, and Wisconsin. Several key issues arose during this focus group. First, the states have no funding to assist EPA in this effort. The states would need some assistance in developing these systems, and they suggested that the most appropriate effort would be small, efficient systems that collect a limited number of essential data elements. There was also a concern over the systems' abilities to track ICs and also take into account the property rights and provisions of each state. In some states, ICs are

not tracked until the site has been closed, so additional measures would need to be taken to identify ICs that are installed and operating prior to site closure.

In addition, ICs in the vicinity of tribal lands would be tracked and identified as being on, or within fifty miles of tribal lands.

As stated before, a minimum of essential data elements should be tracked. The simpler the system, the better the system will operate. Moreover, many smaller states do not have the staffing resources to keep elaborate systems up to date. The ability to add more data elements should be built into the system for future needs as the system is accessed for more extensive information. It was noted that some larger systems, like the RCRA system, can be cumbersome to operate. In addition, states that already have information on ICs should be linked to the IC tracking system to enhance the potential for network sharing to maximize time and resource efficiency.

Glenn Curtis, EPA Region 7

On June 26-27, 2002 most EPA Regions participated in a focus group held at the Hilton Garden Hotel in Washington, D.C. to discuss approaches to IC issues. Regions shared their differing experiences with deed restrictions, which also varied within some regions from state to state. Several key points were discussed: despite differing experiences, regions felt that they could populate data fields on IC boundaries to the best of their ability, specifically property value considerations. They would also recommend contact information for all stages of the IC life-span because each IC differs based on the program authority under which it is installed. Most of the regions expend resources collecting information on the progress of IC monitoring, so this information would be crucial for them. Finally, many would like to see a change in the Brownfields legislation, anticipating that most of the resources used to develop a tracking system would rely on Brownfields funding.

John Bascietto, U.S. DOE

During the Federal Agency Focus Group held on July 23-24, 2002 at DOE headquarters, attendees analyzed five Department of Defense (DoD) systems. They found that specialized terminology used by stakeholders (*e.g.*, Operable Units or OU), could be standardized so there would be one universal "dictionary" of acceptable terms. It was found that the DoD tracks sites through post-closure until sites are transferred; after transfer, sites are not tracked further by DoD. Items that are, and should be tracked are IC boundaries, using Geographic Information System (GIS) and Portable Document Format (PDF) maps. Attendees felt that tracking costs were unrealistic, voicing concerns over the release of information that could pose a security risk.

Ned Burke, City of Denver

The Local Government Focus Group met at the Hall of States in Washington, DC October 10-11, 2002. The representative of the Local Government Focus Group reiterated many of the points made by the preceding presenters, including emphasis on the use of existing systems; accessing and utilizing those systems' data; costs of implementation and maintenance, and limiting data to essential information. The group noted, however, that many county recorder offices have limited

amounts of data that could be accessed and populated into the tracking system with little to no effort.

Representatives of local groups felt that the best data elements to track would include information on monitoring and enforcement data. In addition, cities and counties use a wide variety of legal descriptions (*e.g.*, metes and bounds, parcel numbers, etc.), but in most cases, the most accurate form of information for legal description and location can be expressed in GIS terms. GIS maps should delineate where the contamination lies. They felt that the tracking system should attempt to collect all of this information, where pertinent to the site, but in the simplest form possible. The primary concerns of participants are whether or not the IC has been selected, is in place, and working. The system should be user-friendly and cost-efficient.

Participants felt that any data provided by local governments should continue to be "owned" by local governments. Participants did not want the system users to be able to change data originating from local governments. Finally, participants felt that the system should be able to produce outputs tailored to the needs of the user.

Bob Cribbin, USACE

The Non-Regulated Industry Focus Group was held in October 8, 2002 at EPA West in Washington, D.C. Representatives from the Title, Insurance, and Environmental Management Industries were present. Participants discussed general issues surrounding the system's data elements. They determined that they would be able to use a web-based system, and are familiar with the systems used by Terradex and Earthsoft, Inc. Representatives of environmental insurance providers were particularly interested in accessing an IC tracking system. They noted that IC restrictions and title restrictions are not usually integrated, and that virtually no concept of long-term stewardship exists.

Participants felt that it was difficult to obtain access to information on site latitude and longitude, and that a legal description of the property would be better suited for the tracking system. They warned that parcel numbers are not reliable descriptors because they change as property size is increased or decreased. Another potential area of inconsistency is in state law provisions; consistency must be maintained in the tracking system, despite any modifications to state statutes. The group felt that a system utilizing GIS with historical data would be useful for their work, and agreed that data on IC Location/Boundaries, as well as monitoring and enforcement contacts would also be useful.

The Non-Governmental Organization (NGO) Focus Group was held October 22, 2002 at EPA West in Washington, DC. Key elements that participants felt should be highly visible on the database were: proof of IC implementation, monitoring contacts, monitoring results, the decision document calling for the IC, restrictions in place on the property, and enforcement activities. The group believed that too many contacts on the site would be confusing to the public and would steer them to the wrong source of information. If at all possible, the group felt that a special IC division within the Agency should be created that would act as a clearinghouse for information, including up-to-date points of contact. Attendees also felt that issues surrounding

cost tracking should not be included in the database at all. Further research on the IC cost issue is warranted, but a tracking system is not the appropriate tool to collect that data.

Update on State IC Tracking System Database Changes, led by John DeFina, New Jersey Department of Environmental Protection

John Swartwout, New York Department of Conservation
The New York tracking system was introduced a few years ago after the Governor's office proposed legislation to track ICs. The tracking system tracks each property that has an IC on it, and is used during the annual certification of property owners. The system creates a registry that is published on the Internet and can be accessed to determine whether a site has ICs or engineering controls (ECs). The State identified each site that has a Record of Decision (ROD) calling for an IC/EC under the State or Federal Superfund Program. Users can check to see if the IC/EC has been implemented; consequently it has become apparent that many are not. The system also audits the site to determine whether monitoring or enforcement action has been taken at the site. The information is recorded in an IC/EC registry.

The long term goal of the State is to integrate other cleanup programs, including Underground Storage Tanks and Oil Spills. Brownfields and Superfund sites are now incorporated in the current version of the system.

The State's tracking system is web-based, and tracks data elements including: Section, Block, and Lot; and County/City Address. The system uses the Operation and Maintenance (O&M) system to track and determine what ICs are in place. The information in the system is certified under penalty of perjury, and the O&M managers audit the sites to see if the ICs are implemented. The system uses a FoxPro platform. The Section, Block, and Lot system is already in place. O&M managers are responsible for importing essential data into the system. The State will begin auditing certifications if and when such authority it is granted by the state legislature.

The State is willing to share its system with other states.

Gary Behrns, Missouri Department of Natural Resources
The State of Missouri's Superfund Management and Registry System (SMARS) was not originally developed as an IC project. Small operations run in FoxPro and Microsoft Access were used to manage cleanup status at sites statewide. The original data included information on range, but GIS capabilities and IC information were later added. Currently there are over one thousand sites tracked by the database. The State needed an infrastructure that was useful, flexible, and populated with data regarding abandoned and uncontrolled sites around the nation. In addition to this information is historical background on ICs that are in place at sites state-wide.
The first stage in the development of a system includes the population of essential data fields, which will be expanded upon at a later date. The State wants to include information on Superfund and Brownfields sites in the future as well.

The State is willing to share the database, which is 40 MB without site data, with other states and is involved with MNG in a database sharing project. Mr. Behrns felt that adoption of similar systems by most states will make integration easier because there will be one language that the EPA network will have to understand in order to access and integrate data.

Pat McCutcheon, Wisconsin Department of Natural Resources
The State of Wisconsin uses ICs primarily for soil sites that call for caps and zone restrictions. The original purpose of the system was to track information on groundwater natural attenuation and groundwater well prohibitions within the state. The system uses GIS to identify the site's latitude and longitude. Source documents are scanned into the database and are available in PDF form. Two types of sites are tracked by the system: active Superfund sites and groundwater monitored natural attenuation sites. The system is used primarily to track site monitoring information, which is available on the internet.

The State worked with realtor associations to diversify the user base, and has received positive feedback. Realtors use the system to help buyers identify properties with contamination or ICs in place. As the user base increases and diversifies, the State envisions expanding the types of sites tracked in the system to include all sites with on-site contamination.

The State is willing to share their database with other states.

Steve Johnson, Delaware Department of Natural Resources and Environmental Conservation
The State of Delaware does not have a separate database specifically for tracking ICs, but uses a data management tool to track cleanup sites statewide. The information contained in the database is integrated with a larger database that tracks every site under the authority of the Delaware Department of Natural Resources (DEDNR), including National Heritage Areas.

The system is web-based with GIS capabilities and will eventually contain all environmental information pertinent to these sites. The information contained in the database is extracted directly from source documents.

John DeFina, New Jersey Department of Environmental Protection
The State of New Jersey has a database with GIS capabilities that is available on the Internet . Over one thousand sites are linked via e-data and the database is linked to the IMAP system to help users find the web site. Environmental chemical data is available for each cleanup site in electronic format. This information has revealed that contamination often exists beyond the expected areas of contamination. The quality of the data is often linked to the quality of the data provided by the cleanup entity.

The web site is already being shared as a part of a collective Web Ring based in Oracle; however the contractor who developed the database will not share the database with other states.

Tim Underwood, KPMG Consulting/Air Force Base Conversion
The intent of the Air Force database is to assist the Air Force in delineating and raising

awareness of contaminated areas within former Air Force facilities where ownership has been transferred to other entities. A minimum data set is captured and retained within the database, which describes areas of contamination within former installations, calls attention to state restrictions, contains links to real estate documents with IC information, and defines site cleanup authority. Maps are available on the system, along with selected text from the source document, and Air Force Base and local contacts. These contacts can be reached for information on implementation and length of the IC life-span, termination dates and monitoring dates and findings. There are also links to additional information on real estate transactions.

The system has two general user groups: those who require information for real estate purposes and those who require information for environmental purposes. The system currently tracks all thirty former installations that have transferred ownership. The site data fields are anticipated to be fully populated by the end of 2002.

Jake Jacobsen, INEEL
The INEEL system is web-based with GIS capabilities and tracks ICs in several states. The purpose of the system is two-fold: to track ICs internally and to present information for public use. Sites can be tracked by sub-site, facility, or waste area groups. DOE labs have been slow to start the IC tracking effort, but more sites are being added.

There are various layers within the database containing information on the site, sub-site, and type of contamination. The ICs are directly linked to the contamination type. This information is available on the DOE Intranet to protect sensitive information. The system will use Oracle when the database gets larger.

Brooks Koenig, Oregon Department of Environmental Quality
The State of Oregon tracks sites in the Superfund, USTs, and RCRA programs separately. This tracking system has been in place since the State created its own tracking system in 1988. The system records and tracks sites with ongoing environmental engineering controls and is not truly reflective of all sites with ICs. The state identifies land use planning goals, but the only true ICs that are tracked are those with zoning information, which can be tracked at no cost. It is a web-based system with very simple GIS capabilities. The State has piloted the system with the One-Call System. Some challenges were faced during the pilot, but the State may is considering enhancing its One-Call System.

EPA/OERR Institutional Controls Briefing, presented by Mike Bellot, EPA/OERR

ICs are legal or administrative limits on land use, not physical barriers impeding use. ICs are used in most remedies and are relied upon for the long-term protection of people. EPA relies on others to implement, monitor, and enforce ICs. EPA desires a strengthening of safeguards for this reliance upon third parties. One way EPA can accomplish this is through a tracking system.

The present tracking of ICs is limited; in the Comprehensive Environmental Response, Compensation, and Liability Information System (CERCLIS) they are listed as “not otherwise

specified." This is not an explicit description, making it difficult to follow up on their status. Officials have no way of knowing if the ICs are deed notices, covenants, easements, etc. The databases that currently track ICs in some form are: CERCLIS, CCTS, FYRTS, RCRAInfo, and SPIS, to name a few. If one were to combine the information contained within them, officials still could not ascertain who was implementing, enforcing, and monitoring the ICs.

Therefore, EPA is proposing the creation of a separate system that specifically tracks ICs. This system will manage the entire life cycle of the IC, from selection to termination. A diverse set of stakeholders is envisioned in support of the database.

Mr. Bellot presented the work that EPA has accomplished so far in the process of laying the groundwork for an IC database. This includes the status of IC tracking across America, results of previous focus groups, and upcoming meetings.

Thus far, interviews have been conducted with EPA staff from all regions. Regions 1, 4, 6, 7, 8, and 10 track ICs through CERCLIS, and have no further information beyond the information in the decision documents. Regions 2, 3, and 9 track ICs on a spreadsheet. It is a rudimentary process that was spurred as a reaction to past problems. Region 5 has a post-construction completion database that does not currently track ICs, but they are in the process of adding that data element. Regions, generally, do not track ICs because entering this data requires a higher level of effort. An information request was made to review the regions' tracking systems.

Twenty-four states track ICs in a system. Officials from nine states were interviewed. They were surveyed to find out what states have tracking systems that include ICs, and the cost of running these systems. EPA asked if they would be willing to share their tracking systems with states that do not have their own. An information collection request was made for tracking systems already in existence. New Jersey has spent $17 million dollars to build a system that tracks ICs, and they are willing to share it with other states.

Of the federal agencies, the Navy uses LUCIS (a GIS-based database with PDF link) to track LUCs, their equivalent to ICs. Both the Army and Navy have a site-based system, used only after sites are transferred, and are a snap-shots in time. It is not a dynamic system. The Department of Energy has completed some studies on LUCs, but does not track them at this time. An information request was made to review other agencies' tracking systems.

Finally, a survey was distributed in July 2002 to 200 agencies and all 50 states inquiring about current IC tracking systems and costs. Thus far, there has been a 15% response rate. Results are expected to be compiled and reported later this year.

From this research, EPA has compiled a universe of all possible data elements currently being tracked by different systems. In addition, EPA funded a pilot in which researchers went into the field in Regions 3 and 5 to 72 sites to find key data points identified by EPA. The researchers identified where this information was available, the status of the information, and reported the cost to collect this information.

From the field research, it was discovered that the ICs were not where data indicated them to be. Regional files were incomplete, and often supported decision making, but not implementation. Regional Project Managers (RPMs) did not have information on ICs because they are not in charge of either implementation or enforcement. Potentially Responsible Parties (PRPs) submitted the information, but they did not know where the information was kept. Information from local agencies was difficult to access because each local government filed the information under different identifiers (i.e., tax payer ID, parcel number, or physical address), and in various forms (*e.g.*, catalogs, microfiches, and hard copies in boxes).

Little information exists on ICs post-selection, which means that there is a disconnect between what was called for to maintain protectiveness in the decision document, and what was actually placed on a property to maintain protectiveness. Monitoring is often not occurring. Although PRPs are reporting the installation of the ICs on the property, the state and local agencies that are relied on for monitoring and enforcement of the ICs face resource shortfalls. Therefore, the ICs are not always monitored or enforced.

Therefore, there needs to be a link between all players in the life-cycle of an IC, including EPA, other federal agencies, states, local governments, and the public. The development of a tracking system that streamlines the entry and management of IC data, and its release to the public, will facilitate continued protectiveness at sites nationwide.

Moderated Open Floor, facilitated by Maureen Findorff

Q- Is anyone tracking unremediated sites?

A- A participant from Oregon responded that the State tracks sites with reported hazardous substance releases, from which a subset is created of sites where a release has been confirmed. A second subset is created of sites where actual remediation is conducted.

A participant from New York noted that the State maintains four databases with different categories, namely Superfund, ORE, RCRA, and Brownfields, and a representative from Wisconsin said that the State tracks all open sites, including spills. Data captured by the State of Wisconsin include the site's cleanup status and tracking reports. The database is limited, however, in identifying actual locations (*e.g.*, street address).

A participant from Missouri noted that the State tracks sites with smelters, as well as wood treatment plants and mines where lead is a contaminant. There are mines in six of the State's twenty-five counties.

Q- Will the IC tracking system be bureaucratic in nature? For example, will data elements include things like the number of sites with ICs, and types of ICs, etc? Will data accommodate the needs of local, state, or federal government, or will it be more geared towards the public, or stakeholders in potential purchases of contaminated properties?

A- A participant from New Jersey responded that the State's programs serve both purposes. The public has a large interest in researching contaminated sites and this information is made available to the public. However, there is also a need for internal tracking functions. The more structured the data, the more useful it is for internal management. New Jersey's IMAP applications allow display of some data in the system and provides the public access to basic information. More information will gradually be released as the system is further developed.

A representative of the Air Force said it uses the database for internal management and public access to information addressing real estate and environmental concerns. The database does not contain all the information that could be desired, but it does point to additional resources. It was noted that the system is important for management purposes; as local staff leaves, the database will remain as a long term resource for new staff. Stakeholder access is envisioned for IC Light. There will be a management function that will spur future actions at the site, as well as modules with tools for creating an IC Implementation Plan as well as cost information resources. IC Light will also be GIS-based and tailored to provide information to a multitude of stakeholders.

Q- Have any investigations been conducted on the uniform model laws? If so, have recommendations been made?

A- A representative from ICMA indicated that The National Conference of Commissioners for Uniform State Laws has investigated this issue and determined that work done in this area would be particularly labor intensive. Reviewing laws nationwide and formatting them would involve a national re-writing of laws as well as ratification by local governments. ICMA will be monitoring this effort, and as the issue evolves, will lobby states for ratification.

The participant from ICMA also pointed out that most private property transactions at the local government permitting processes are triggers for public notice of ICs. The goal is to get the right information to the right people at the right time. Minimizing the number of IC breaches will only be attained through education. Some of these breaches will be difficult to regulate, including those caused non-regulated activities, like gardening.

Q- How will the network be evaluated?

A- A representative from EPA/OERR responded that the system will not be a linear system, but circular, meaning that information will flow between stages and will have to be evaluated for data quality. The participant from EPA/OERR pointed out that a group should be charged with determining who will maintain the system and who will monitor inputs and outputs. In addition, the system is not meant to mandate information from sources or to centralize all information into one database.

Q- Does EPA intend to manage environmental remedies at sites with this IC tracking system

network, or would EPA would use the system to assert greater control over local land use decisions?

A- A representative from EPA/OERR explained that the system is not intended to be a form of command and control environmental regulating. Rather, the system is intended to be a recording and managing tool for local land use authorities. EPA/OERR believes that land use decisions are best made at the local level.

A participant from ICMA noted that the goal of LUC and IC tracking is to get the information, which is environmental in nature, to the users. Some users will utilize the system for planning and public access. The local land use process is intertwined with the site cleanup. Authorities involved in these two processes must work together so that better land use decisions can be made and the right documents get to the right people.

Q- Will there be "representatives" from each user group providing information on environmental remedies?

A- A representative from EPA/OERR pointed out that it will be difficult to have people from different areas of expertise keep the information in a standard form. For example, if the data entry "representative" is a planner, they will have to take environmental end users into account when entering data. It is more productive to have the local agency monitoring and enforcing the IC also be responsible for providing data.

Q- Will there be local land use input into the design of the national IC tracking system network?

A- Yes, to a large degree those users have been providing input to the design through the focus groups and workshops. There was a strong desire to find out whether state and local governments value sharing the information, and that answer is yes. The results from the focus groups, in which local governments participated, indicate that a total of 34 data categories were considered essential and should be shared.

Q- Where will the data come from?

A- A participant from New York noted that state regulators do not "invent" the information to be tracked; the information comes from the responsible parties (RPs), which range from industry to the federal government. These entities may want to restrict some of this information. In addition, some data elements may capture too much, or inaccurate information. This will be an issue that the input, systems, and output groups will brainstorm later in the workshop.

The State of New York has a desire to enforce regulations and requirements, but they recognize the need to finish the cleanup process first, and to manage data related to those actions. There is a state law for property transfer that requires tracking and disclosure of

ICs. This tracking system is needed so that each player in the State's process of tracking and disclosure can do their job.

Another participant pointed out that there is a difference between the remediation land use and actual land use of a property. For example, a decision document may call for industrial uses, but depending on the jurisdiction that the property is in, school houses and day care may be considered "industrial uses" (*e.g.*, Oregon). There is disconnect between the restrictions envisioned for a property by the decision document author, and what is actually allowed according to zoning ordinances.

Q- The system will track the input and output of ICs in the database. How does one categorize remediation plans for data or land planning? As input, or output?

A- It was mentioned that if output is used, developers should be stayed from developing and take better care to pay attention to zoning provisions.

Outputs

Local governments need a source to access to verify whether or not a site has an IC in place. These data elements must be sent to commonly used resources like building permitting offices and planning departments. This information may not currently be readily available to the public.

In the past, exposure restrictions were not clearly defined, therefore the risk could not be accurately discussed with the people who need that information the most– the public. There has not been any agreement on what should be provided to the public, therefore there has not been definition of what can be disclosed. It was pointed out that the agency that chooses the remedy is not responsible for implementing the IC, but local governments, which may lack the funding to do so.

One participant stated that there are different outputs for each system; therefore, attention should be paid to standardizing all existing systems so that data sharing can be made more efficient.

Participants noted that the language used by each group of users posed a barrier between inputs and outputs. Language should be made more precise and universal.

The more outputs required, the less clear the information may be. One suggestion was that a predefined list of outputs be created to ensure the same information reaches users with similar purposes. Regardless of the user's requirements for the database, unallowable land uses should always be clearly stated.

It was also pointed out that EPA is obligated to balance the community's right-to-know and the sensitivity of certain proprietary data.

One fundamental output of the system will be how the system will relate to the existing land

records industry, and how the historical data can be accessed.

One participant questioned whether getting information into the system is less important than taking legal considerations into account (i.e., legal notification requirements). There are already official legal records acknowledged by the industry that are tailored to disclose information at the appropriate time. Moreover, standardizing the information within the database may lessen its value to individual states. Each state has its own set of regulations and it is important to allow the information in the database to reflect these special properties. It was also pointed out that there is already an established language that may help with discrepancies in the system, and that language is "legalese."

Another participant felt that an IC tracking network is not necessary because the property owner has the responsibility to research this information on their own.

One participant wanted to know if the system was intended to be a prescriptive system, or if it will serve as a warning flag to potential property owners. The information may be valuable to both purposes.

Additional questions included: How reliable will the quality of data be? When authorities are required to review the database during property exchange, will the information be dynamic? If the new owner does not like the IC, do they have the option to remove it from the property? and What happens when an IC is removed from a property– will that property be removed from the database?

LUC/IC Information Framework, presented by Joe Schilling, ICMA

The International City/County Management Association (ICMA) a professional and educational organization representing appointed managers and administrators in local governments throughout the world. Their mission is to foster excellence in local governance. ICMA has been taking an initiative in researching Land Use Controls (LUCs). They have hosted various meetings, including the second annual Base Reuse Research Forum and the Land Use Control Implementation Plan (LUCIP). They manage a web site dedicated to LUCs, www.LUCs.org. During 2001, several Brownfields Research Forums were hosted around the country, which contributed to the publication of their research report, *Beyond Fences*. They have also hosted several Federal Facility stakeholder forums. The 2001 San Diego research forum identified LUC information systems and helped brainstorm a framework for a federal system.

The participants of the ICMA San Diego forum identified several key questions: Who are the end users and decision makers? What are the activities and behaviors we are trying to prevent or protect? and How much data should we include?

ICMA envisions a network of LUC/IC Information Systems. This will require a coordination of existing systems (from local, state, and federal sources, as well as private industry) to share information on LUCs/ICs. Primary partners in this effort include: federal agencies, state

environmental agencies, local governments, and private sector consultants and systems. Partners will need to assign responsibilities and time lines. This will involve evaluating each partner's strategic strengths, and creating incentives for participation in the design and maintenance of the network. There are several critical linkages between state and local governments, real estate and land development groups, and the environmental tracking industry. Intergovernmental cooperation and a willingness to take local problems to a national level are vital.

Information outputs are thus far the least researched components of the system. It must be determined when public notice of an IC's existence should occur, or whether notice should be given at all; what typical events or transactions trigger notice (*e.g.*, property and real estate transactions or government permitting); and how can we get the right people the right information at the right time? This is the basic question surrounding the outputs of all these tracking systems.

Finally, a network evaluation function will allow users to follow a feedback loop at each stage of the process. A working group of key partners will help design and maintain the network.

Ms. Findorff briefly provided background on the IC Tracking Systems Workshop to occur the following day, and adjourned the workshop.

Second Day

Plenary Session

A representative from EPA/OERR discussed the key objectives of EPA's IC Tracking System development meetings and outreach surveys. The Agency's goal is to reach an agreement on which data categories are necessary, decide who will be responsible for populating the categories and creating ways to integrate data into a national system. The participant from EPA/OERR asked the group to identify potential barriers for information input, system coordination and information output.

Ms. Findorff, Ms. Maher, and Mr. Engelbert led the plenary session on identification of issues, concerns, or barriers for system input. A representative from EPA/OERR reminded the group that the focus groups demonstrated broad agreement on 34 key data categories that are essential for IC tracking systems to incorporate. These 34 data categories help decision makers know whether the ICs selected in decision documents are implemented, monitored, and effective.

Issue Identification

- Ensuring accurate, up-to-date information will be difficult because site information changes frequently. A large amount of resources will need to be devoted to data input so that information remains current. (INEEL)

- Creating the technical capability necessary for systems to share data will be difficult. (State of New Jersey)

- Facilitator note: Current discussion focus is on input issues, rather than technical systems problems.

- It may be difficult to obtain sustained funding for a national system. (U.S. Navy)

- There has been no discussion yet on the issue of how much the system will cost and who will pay for it. (USACE)

- Data must be presented in a way that people who are unfamiliar with ICs will understand. (City of San Francisco)

- Stakeholders must realize that the system is going to change with the requirements of ICs. (Private sector)

- A major concern is how to get all of these independent existing systems to work together. For example, latitudinal and longitudinal data from one system may be different from another. (State of Missouri)

- The two main reasons for IC tracking are 1) identifying the contaminants that cause the need for the IC and 2) Keeping people from being exposed. A number of problems arise because contamination concentrations vary by site. (INEEL)

- The system will have to allow access to more site information through links. For the IC tracking system to providing detailed information on every site would be difficult if not impossible. (EPA/OERR)

- The system will need to have a narrative and a mapping system so that a site can be located. The system will need an index so that someone could find a site in Alexandria, Virginia, for example. There needs to be common language usage so that everyone can understand the information. (CPEO)

- The system is not going to be able to present quality data for remedies that are already implemented, and will therefore reflect inherently problematic data. ICs by their very nature are vague, especially those created for remedial actions taken five or more years ago. (USACE)

- The system will have to be flexible enough to accommodate various states' statutes that authorize the use of ICs. (U.S. Army)

- At times it is difficult to determine who is responsible for recording ICs. (Quapaw Tribe)

- Most locales utilize multiple ICs for one site to ensure effectiveness. It would be a mistake to count only one IC at a site where multiple ICs are in place. The system should account for sites that have multiple ICs. (State of Oregon)

- The system should be designed to allow for dynamic queries so that someone could find out, for example, how may ICs are in Florida and what they are for. (Private sector)

- Who will the final arbitrator be for deciding which data point is correct? Frequently one system will have has different site data than another. There will have to be a party who determines which data are correct. (EPA/OSW)

- A data entry and verification process must be developed. (Private sector)

- Facilitator note: The objective of this plenary session is simply to identify issues or potential problems. Later in the day the objective will be to create short-term, mid-term, and long-term solutions to the problems identified during this plenary session.

- EPA would like to have a list of data input actions, system coordination actions, and data output actions. (EPA/OERR)

- Is the objective of the proposed IC tracking system to serve the needs of EPA? (DOE)

- The answer to that question is "absolutely not." EPA intends to design a system that serves state, local, private sector, and other federal needs. Anyone who is interested in IC information should be able to benefit from the system and network that it is designing. A national system will not work unless IC stakeholders participate as partners with EPA. (EPA/OERR)

- A number of technological solutions exist to the problems identified thus far. (State of New Jersey)

- The objective will be to identify the best solution for each problem identified. EPA wants an action plan to be developed for IC system development. (EPA/OERR)

- Local developers are interested only in information related to their local areas. Adding additional data to the IC tracking system will not be worth the extra effort. (U.S. Navy)

- Although the IC tracking system as it is being designed will allow local developers to quickly access local information, other users may require additional data, making the inclusion of more data in the system worth the extra effort. (EPA)

- EPA/OERR should be applauded for bringing different groups into the development process of the national IC tracking system. A truly national system will not work without widespread participation from all parts of the country. (State of Missouri)

- Local authorities will want to "keep their data to themselves." There will need to be some incentive for local authorities to contribute their data to a national system. (INEEL)
- There is no mandate for the IC tracking system in the State of Missouri. Without a mandate, there is no way to ensure funding for the continued maintenance and operation of an IC tracking system. (State of Missouri)

- Facilitator note: A statutory mandate would provide incentive for local authorities to contribute data to a national system.

- Widespread use of ICs has created its own mandate for IC tracking due to the need to protect public health and foster economic development. Listening to local authorities is critical to the development of a quality national system. Most IC data is at the local level, and local authorities are unlikely to share it unless the national system is designed to serve their needs. What were the results of the survey that was sent out to local governments regarding what local authorities would like to see in a national system? (U.S. Army)

- EPA sent 275 survey forms to local authorities asking specific questions about IC tracking systems and costs. Thus far, EPA has received 40 responses. (EPA/OERR)

- How will EPA enable existing systems to work with a national system? The system in the State of Colorado should be reviewed for technology that enables data to transfer from one system to another. Also, the Terradex, Inc. system, which can be found at http://www.terradex.com, distributes data free of charge to local authorities through their existing systems. (Earthsoft, Inc.)

- Facilitator note: The group will discuss data sharing technologies in further detail during the systems plenary session, and at the IC conference scheduled to take place in 2003.

- Brownfields and ICs go hand in hand. The big push for Brownfields redevelopment should lead to funding for a national IC Tracking system. (EPA/OSW)

- Facilitator note: The following is a list of data input issues that have been identified thus far by the group.

    1. Identifying the IC is and what it does
    2. Presenting IC information in a manner that is useful and consistent across systems
    3. Presenting verifiable, quality IC information with clarity
    4. Developing a system with input flexibility
    5. Updating existing data with new data inputs, and assigning responsibility for updates
    6. Providing for continuous stakeholder input
    7. Creating incentives for local authorities to share their data
    8. Predicting costs and obtaining funding for a national system
    9. Conducting outreach to those who need to know about data inputs
    10. Identifying multiple ICs at a site

- The use of ICs comes with a mandate of protecting human health and environment. A national system needs to account for the principal objectives of ICs. Protecting human health and the environment will not be achieved without tracking ICs. (State of Oregon)

- In the State of New Jersey, designing a quality system creates a mandate for it to be operated and maintained. A short term goal of the New Jersey system was to make it available to all users, which generated usage. As users became reliant on the information provided in the system, a mandate developed to continue the system's operation and maintenance.

- Will there be a mandate on how frequently data needs to be updated? How will data updates relate to data sets in other systems on the same site? (USACE)

- The national IC tracking system must be designed in a way that is relevant to local agencies. There are many local agencies with specific tasks that implicate ICs. Some

local authorities are unfamiliar with ICs and IC objectives of protecting human health and the environment. These authorities need to be educated on the importance of ICs and the importance of being involved in the process of IC monitoring. An agency interested in economic development does not necessarily realize that ICs in place are necessary to protect human health and environment. (NGO representative)

- Local authorities already have their own IC tracking systems for a purposes unrelated to environmental protection. Local authorities are reluctant to change their systems to accommodate a national IC tracking system. It takes time and effort for system changes and local authorities need motivation and incentives to change their ways. (City of San Francisco)

- Without widespread participation at the local level, a national system will be impossible. There must be incentives for widespread participation at the local level. (State participant)

- There could be legal risks associated with participation in a national IC tracking system; relying on data entered by thousands of different parties could present unacceptable risks for data owners and other stakeholders. (EPA/OECA)

- Most queries will come from local parties interested in site specific information. The system also needs to accommodate EPA regional officials who need to run multiple data queries. To ensure that the system is used correctly and fully utilized, EPA will have to provide adequate training for EPA regional offices. (EPA/Region)

- Legal liability is a major issue. The system must have quality metadata input; responsibility rests with those doing local data input. (State participant)

- Existing ICs that are not currently in tracking systems will present a data input issue. Parameters should be developed to decide which ICs not already in a tracking system need to be added for purposes of the national system. (State of Kansas)

- IC data input is going to become an additional duty for someone at the local or state level. It is important to remember that the more data input assigned, the harder a state or local official will have to work to get it done. (State participant)

- Remedial project managers (RPMs) will be key customers of the system. RPMs need IC information to ensure that remedies continue to be protective. They will need to know the components of the IC, and what the control is intended to protect in order to determine whether the IC is meeting its objective. (State of Delaware)

- Problems will arise if the system is designed to please everyone. Rather than trying to please all interested parties, the objective should be to keep data as small and usable as

possible. The more data there are, the more problematic the database can become. Stakeholders will see the system as a big hassle rather than a helpful tool and data quality will deteriorate. We need to stop trying to please everyone, and keep it simple. (State of New Jersey)

- How will unstructured data input be entered into the system?

- There should be a pre-set list of output reports that one could readily obtain from the national system. (EPA)

- At the national level officials will only need to know if an IC is in place at a site, and if so, with whom to discuss the IC. There is not much a federal official can do about ICs implemented and monitored at the local level. (Private sector)

- Not all ICs, however, are local. ICs are often called for in EPA decision documents or court orders.

- Regardless of whether they are called for in EPA, state, or local documents, EPA needs to know only if there is an IC and if so, who to contact about it. (Private sector)

- Facilitator note: EPA needs more extensive information on ICs in order to respond to inquiries from Congress.

- This is why EPA is creating a national tracking system. The Agency needs to know if ICs are being implemented and meeting their objectives. EPA is working with interested parties on ideas for the system's design because that will make for a more useful system. If EPA were to design a system on its own, most people would not participate and the system would fail. (EPA/OERR)

The facilitator ended the session on input and asked to group to begin identifying system-coordination related problems.

- A national IC tracking system could include a tremendous amount of data if EPA wants to include sites beyond those listed on the National Priority List (NPL). The system in New York has thousands of sites, and thousands of entries are made for each site. (NGO representative)

- It is true that data for sites beyond the NPL (or other sites that EPA has a statutory mandate to track) would present problems. EPA intends to create a useful system that links with other systems, rather than to create a supra-system. (EPA/OERR)

- Is the purpose of the system was to track ICs, or is it to help with Superfund site Five Year Reviews? If the system is for Five Year Review purposes, it will cost a lot more money to create and maintain. (U.S. Navy)

- Facilitator note: The data categories on the matrices represent a fairly small set of data.

- It would be helpful to have a system that has query ability and pre-programmed reports that could be easily pulled up. (EPA/Region)

- Facilitator note: Pull-down menus for data queries may be helpful here.

- EPA's data will include thousands of historical sites. At some point it will be too expensive to enter sites beyond a certain period of time. (EPA/OERR)

- Facilitator note: It is true that there is much non-system-compatible data that cannot be input that could create a large data gap.

- One of the data categories in the matrices includes a link to historical data. (Private sector)

- What would happen if a company that owns property with IC restrictions goes bankrupt? It is critical to know what will happen to an IC linked to property owned by a bankrupt company. (EPA/OSW)

- As long as the ICs on such a property are tracked, the successors in interest can be apprized of the existence of ICs. (EPA/OERR)

- Will a user of the tracking system be able to search unstructured data in the national system with key words or by an index search? Would the system be operational 24 hours a day, 7 days a week, or will some downtime for maintenance be necessary? (USACE)

- Queries of unstructured data by key word or index would be part of the system design; invariably, all systems suffer from maintenance-related downtime. (EPA/OERR)

The facilitator ended the systems-coordination discussion and began the discussion on outputs. She asked the group what types of outputs the system would need so that users could see relevant information.

- The system should have GIS output capability. Once one gets into GIS, one has a lot more available tools. (Private sector)

- A more appropriate term may be "geospatial outputs" as opposed to GIS. (DOE)

- The starting point, nevertheless, is GIS. Current GIS technology cannot accommodate the range of data this system would have. Outputs should enable the user to monitor conditions that ICs are designed to regulate. (State of Missouri)

- Having archived information that could be analyzed for trends would be extremely helpful for DOE. The ICs implemented by DOE need to be monitored over a long period of time. (DOE)

- Facilitator note: Data on risk was not included in the focus group's 34 agreed-upon data categories because it involved too many unresolved complex questions. It was decided that there was no way to present an accurate view of risk.

- It is desirable for an IC tracking system to alert someone to an IC, as a means of ensuring that the IC is properly monitored. DOE wants to make sure that states and local governments know of the risks associated with an IC; therefore, some type of alternative system is necessary. (DOE)

- Facilitator note: Risk was uniformly disregarded by all focus groups as a data category.

- Although risk "fell out" as a common data category, agencies can independently track risk with their own systems. (USACE)

- Information on residual risks that are contained by ICs exists in other places. The necessity of adding it to the national IC tracking system is questionable. (EPA)

- Risk is going to come up consistently as an issue, and will eventually become a necessary data category. (State of New Jersey)

- A risk data category must identify exactly what contamination the risk is related to. (U.S. Navy)

- Communicating risk to the public can only be done in a general way. For example, New Jersey operates a basic high, medium, and low risk assessment for the state IC tracking system. The other option is to present data that would allow someone to assess the risk themselves. (State of New Jersey)

The facilitator ended the discussion on output. She asked the to group to prioritize issues during the afternoon breakout sessions and encouraged each group to try to develop solutions for problems identified during the morning session. An action plan should then be developed to make those solutions happen. She explained that this information would be integrated the following day to create an action plan for creating an national IC tracking system.

Systems Breakout Session

The participants in this session included:

Arnold Gray, Earthsoft Inc.

Carlos M. Lago, EPA/OSW
Cheryl Runyan, National Conference of State Legislatures
Craig Huber, Argonne National Laboratory
Dennis Farrar, New York Department of Conservation
Elaine Warren, City of San Francisco
Fred Lombardo, USACE
George Klein, New Jersey Department of Environmental Protection
Jake Jacobsen, INEEL
Larry Zaragoza, EPA/OERR
Mike Bellot, EPA/OERR
Nancy Kosko, United States Army Environmental Center
Randy Hippen, EPA/OERR
Roy Tan, Parsons Corporation
Sa'ad Masri, DynCorp LLC

Ms. Findorff asked the group to discuss systems issues identified during the morning plenary session. The group elected not follow the instructions provided by the facilitator and instead chose to discuss general issues related to systems coordination; therefore the notes from this discussion are not consistent with those of other breakout groups.

Benefits to stakeholders were discussed; the group felt users would not use the system unless they directly benefitted from it. Possible benefits identified by the group included saving time, money, and resources.

Identifying groups of potential system users was discussed. Potential users were thought to include local, state, tribal, and federal government officials, along with PRPs and the public. In addition, these groups will also be data sources for populating the system. One participant stated that local governments have standard business processes for day-to-day operations involving permits, taxes, zoning, and land records. Another participant cautioned the group about unfunded mandates. One suggestion was that states and local users could pay a subscription fee to include their data. An EPA/OERR representative responded that he did not envision states or locals having to pay to include their data.

A question was raised regarding the legal risks surrounding the data in a national tracking system. The group generally thought that the risks could be minimized with proper and full metadata, and appropriate disclaimers about data use.

The group discussed the following possible solutions for the issues raised:

- Create a web-accessible data entry module for state and local users.
- Promote the system as a tool to market Brownfields sites.
- Eliminate duplication of data entry for entities with systems by having a standard format that can be written to a file for data harvesting.
- Provide the 43,000 government entities with a "jet engine," *e.g.*, a stripped-down

Microsoft Access application that allows for upload and download.
- Provide a simple, short list of data elements that entities should be tracking.
- Develop a well-defined data structure; clear data standards are necessary.

An EPA/OERR representative commented that having a data standard is useful not just because standards are a requirement, but that it should minimize work for data providers. He also mentioned that the EPA tracking system will need Office of Management and Budget (OMB) approval, and that as stakeholders, participants may have to participate in this process.

One participant recommended a hierarchy of systems as a way of addressing discrepancies in terminology. Another participant wondered whether this would be a centralized or decentralized system.

To summarize the discussion thus far, the facilitator listed a rough set of requirements for the system that the group had identified:
- web-accessible
- centralized database with decentralized access
- metadata
- ad hoc reports
- standard reports
- capable of meeting vertical EPA reporting requirements

One participant suggested that the system would not be able to meet every user's needs. A representative from INEEL stated that EPA's list of 34 data elements is close to what they currently track.

EPA/OERR suggested that the next step could involve implementing pilots for the IC Light tracking system.

Following a short break, one participant suggested that EPA define the critical needs of the network for each user group, including an estimated cost-benefit analysis. EPA should do this to encourage buy-in from stakeholders. Another participant suggested that EPA tell local government officials and users why they should use a national tracking system. To be used at the local level, the tracking system will need to be made simple, and resources will need to be provided. Furthermore, planning for ICs should be more closely coordinated with local agencies prior to implementation.

The breakout group agreed that education is a critical component of outreach to stakeholders. One participant suggested that EPA make populating the tracking system with local information a reporting requirement for local officials.

The group concluded the session by developing a list of next steps:
- Research best practices/methodologies for similar processes, *e.g.* flood plain insurance, lead paint (this step could be taken concurrently with the following two steps)

- Clarify the vision of the network
- Define critical network needs for each user group
- Define costs and benefits of the network
- Create a conceptual design
- Identify functional requirements
- Develop a system design
- Develop prototypes
- Conduct pilot testing and analyze results

Output Breakout Session

The following participants attended the output breakout session.

Bruce Engelbert, EPA/OERR
Carlos M. Ago, EPA/OSW
Kenneth Schefski, EPA/OECA
Mike Sowinski, DPRA
Joe Schilling, ICMA
Angela Atkins, U.S. Army
Robert Stout, Missouri Department of Natural Resources
John Swartwout, New York Department of Environmental Conservation
Rich Engel, U.S. Navy Facilities
Wren Stenger, EPA Region 6
Amy Edwards, Holland & Knight LLP
Brooks Koenig, Oregon Department of Environmental Quality
Bob Fitzgerald, EPA Region 9
Don Bruce, EPA Region 5
Steve Johnson, Delaware Department of Natural Resources
Bob Hersh, Center for Public Environmental Oversight (CPEO)
John DeFina, New Jersey Department of Environmental Protection

Mr. Bruce Engelbert of EPA/OERR facilitated the discussion. He asked the group to discuss solutions to the following output problems identified during the morning session plenary session.

1. How to deal with the tension between remediation and land use
2. Whether problems identified by various stakeholders should be considered first
3. Developing a definition for output
4. How to generate financing for IC monitoring
5. How to develop a clear objective for output information
6. Whether it is necessary to specify prohibited uses
7. Creating ways for those involved with property transactions to access network information
8. Developing the system to so that it provides information on risks that the IC is designed

to prevent
9. Providing information on the life cycle of ICs
10. Developing standardization of data outputs (the group related this to problem 3)
11. How to connect people who work with land use and ICs to the network – system will have to link with different systems
12. What to do when the remedy selecting agency provides incorrect information to the party responsible for IC implementation
13. How to create a national network in a large country where jurisdictions use different terminology
14. How to make information readily available to those who need it
15. Developing ways to resolve the tension between the community right to know and proprietary data
16. How to define data quality consistency for output purposes
17. How to create a transparent, user friendly system
18. How to ensure that data collected is useful
19. The system needs to be designed so that users in different areas can access data
20. How to motivate stakeholders to feed data into the system
21. How can the network be designed so that it accommodates information already available
22. How to update information
23. How to present multiple ICs on the network
24. How to provide useful training
25. How to fulfil the needs of key users like remedial project managers, enforcers, permit writers, and lenders
26. How to create a menu of available reports
27. How to ensure that an IC will be monitored if a company goes bankrupt
28. How to develop ways to incorporate GIS concepts and technology
29. How to accommodate different users
30. Should the national system be designed to support program evaluation
31. Should the system be designed to show IC successes or failures

The facilitator asked the group to identify common threads in the tracking system issues. He also asked the group to discuss the most important output issues first. He suggested two common threads in the output issues: how to produce clarity of output data, and how to define the purpose of the tracking system outputs.

One participant said that the most important problem to resolve is how to make the system accommodate different users. He identified seven classes of common users that would benefit from the system:

1. People engaging in property transactions
2. Local planning boards and permit writers
3. Environmental groups
4. Utility one-call systems for excavators who could hit environmental contamination
5. Emergency responders

6. Monitors and enforcers
7. Agencies that manage programs and report to Congress

The participant noted that the output group included representatives from all of these categories of users. He added that classes one through five are an external audience while classes six and seven are an internal audience.

A participant from the State of New York commented that the New York system is primarily designed to prevent public exposure to residual contamination, noting that the above user list does not account for the essential public health objective of the system.

Another participant asked where corporations would fit in to the user list. Companies frequently engage in property transactions and should be alerted to the presence of ICs. In response, a participant said that class one, "people engaging in property transactions" would capture such companies. The facilitator asked whether a separate category should be created for property managers.

One participant said that property managers may qualify as a separate group, emphasizing the need to classify user groups into common classes. Another participant agreed, adding that property managers do not convey property through transactions. One group member noted that PRPs are responsible for IC implementation and monitoring at 75% of sites, and PRPs do not fall into a common class of "people engaged in property transactions."

An consultant for EPA offered a conceptual model for looking at output data issues: the group should focus on how to get the right information to the right people at the right time. He said that three questions are essential to this discussion: 1) who needs the information; 2) what information needs to be provided; and 3) how can information be provided.

A participant asked whether the interests of some groups have priority over others, such that the national system would be designed to accommodate the needs of primary users only. In response, the facilitator said that EPA is not designing the national IC tracking system network with the idea of serving the interests of one class of users more than any other class. He reminded the group that the workshops are about putting together an action plan for development of a national tracking system for a diverse set of users. EPA plans to build a separate tracking system to serve internal Agency needs.

A participant suggested that some queries will come from people interested in ICs for information on environmental contamination and associated restrictions. Most inquires will likely come from parties interested in property transactions. Thus, parcel information will be important to a large percentage of users. Another participant agreed, and said that focusing on property transaction is a good idea. Existing systems help protect buyers from health risks associated with properties. The question is how the national IC tracking system can do the same thing but in a better way.

Use of the property records system was suggested as a model that would enhance the creation of a useful national IC tracking system. Since local governments are accustomed to using property recording systems in their work, using it as a basis for the IC tracking system would make it familiar to local authorities. On this note, another participant commented that a lot of IC-related issues do not fall into the property transaction category. A participant from the State of New Jersey agreed, adding that the long tradition of property recording has done little to inform the public about environmental contamination and ICs.

EPA/OSW said that EPA's primary concern is ensuring remedy completion. Congress has mandated and the President has delegated that EPA complete protective environmental cleanups; tracking ICs is a way to show that this job is being done.

The national flood plain map was suggested as a good model for IC tracking.

The facilitator asked the group to focus on what advice could be given for the IC tracking system, with respect to the identified user classes and output problems. He asked the group to choose some general areas for review.

One participant emphasized the importance of collecting and disseminating data to all possible users; local authorities would use any information available. Another participant responded that it is impossible to identify necessary input data until the users are identified.

Another group member agreed, adding that identifying the overall purpose of the network would help identify who the users are. Besides knowing who may use it, we need to be clear about the purpose of having a network with IC data. Defining the purpose of output helps clarify what data the national system needs to disseminate. It is important to make sure that officials use the information in the network. Otherwise, the important objectives of ICs - preventing access to contamination and to promotion of reuse - will not be served.

The facilitator said the group should start discussing clarity of output; in other words, how to make information clear.

One participant noted that implementing a common language for IC tracking systems would be extremely difficult because existing IC data systems already have specific terminology. Clarity could be achieved by translating jurisdictional terminology into a common language for the network. Thus, one data element would be identifiable to users in different jurisdictions by translating jurisdictional specific language into a common language.

The facilitator asked how a crosswalk could be developed to translate local terminology to a common language for the national network. A participant responded that this is more of a systems issue because the idea is to translate as information comes into the national system. A comment was made that users could be made responsible for translating their local terminology into a common language. A participant commented that there is no need for a common language; however there may be some utility to a vertical common terminology. The group

agreed that it would be important to look at the 34 data categories and see where problems with terminology may arise.

A participant asked how the group could discuss output without knowing exactly what information would be input into the national system.

Another participant commented that it would be useful to identify a key element in each functional area. After identifying the key element, determine whether there is an existing standard for that data, in the property transaction business for example.

Standardized language was described as helpful for user groups because jurisdictional-specific terminology causes confusion. Clarity of purpose cannot be divorced from clarity of output. Different users will have different reasons for using the system.

The GIS community already has a common language between different systems. The national IC tracking system should be robust enough to apply everywhere, and common enough to allow users to work together. The national system should have tools to make data useful to users who have different terminology and needs.

Another participant disagreed, saying that information from the national IC tracking system should be no more than clues that point users in the right direction. Having a standardized language is useful but not critical. Output items can be viewed as things one might see on a road map of the United States, for example.

Having GIS data is important, but it is even more critical to realize that different users will have different reporting needs, according to one participant. The group needs to identify what kind of data people will want to come out of the system.

A participant suggested minimizing the number of standard data elements to a minimum. The standard data elements include location of the site, identification of remaining contamination, and site restrictions. Adding more data elements would accommodate only a small number of users and would cause unnecessary complications. Users should be able to tailor general data to their needs.

Another participant asked if the plan was to link existing IC tracking systems together. An EPA consultant responded in the affirmative that this was meant by "network." A group member added that the discussion was about outputs, which is more about what one would see on a computer screen.

A participant suggested that the group assume that the 34 data categories listed in the matrices are the input. Not all groups would need all data categories but, nevertheless, these categories would alert different users of the need to stop and look at what an IC requires. Another participant added that output issues – clarity, uniformity, standardization – are attributes of data. Also important is the level of detail that would be provided on data elements; another issue is

quality of information. If the input group is telling us what the information is, then we will need to define the attributes of the input data.

The facilitator asked whether, for output purposes, the group should look at input categories and see if clarity and uniformity are needed. A participant responded that clarity and uniformity must come into a discussion on output.

A participant said that she was confused about what the group is supposed to be doing. She said that the focus groups decided on data categories and the morning plenary session identified barriers or problems with developing a national system. She felt this group should be talking about solutions to output barriers, but noted the discussion thus far had not broached solutions, saying that the group should focus on how to solve problems like number 11 – how people who work with land use can be tied into the national system.

The facilitator agreed and suggested discussing how land use experts can be linked to the national system. He said that land use planners may not have access to the data bases used by environmental managers. A EPA consultant offered a solution to this problem: the Terradex, Inc. system would be a useful model for tying in local governments to environmental databases. The system translates information so that planners do not need to know detailed terminology different from their own. Another participant agreed and added that the Terradex system is a good model for tying local users into a network. The purpose of Terradex is to connect local planners with information on ICs.

The facilitator asked whether there are other ways to connect existing databases with local authorities.

A participant suggested creating a system that enables local offices to find deed restrictions through a computerized system rather than through record searches.

Another participant asked whether the information needs to be in a standardized format. A group member responded that it is more important to have consistent information. There also needs to be some translation of data so that local authorities will be able to use it for their work. A possible way to do that would be to classify land in different ways. For example, the New York system has land information in one certain format, but the system could enable the same data fields to be viewed through different systems.

The facilitator summarized the group's comments as suggesting that the national system must be flexible so that it can suit the needs of different users.

Partnerships should be developed with associations for marketing purposes, according to a participant; EPA should go to the National Governors Association and National Mayors Association to promote the national system. Another participant suggested that EPA go to user groups and convince them to alter their systems in a way that would allow new information sets.

The facilitator said that success of the national system depends on changing current practices. Another participant agreed and added that the One Call community needs to be convinced that ICs are critical.

The facilitator asked the group to identify the most important issue to start with.

One participant responded that the goal is to get people to become partners with the national system. To become partners, they would have to change the way they do business. A participant added that having local authorities as partners is something that would happen in a gradual way. The fist action step is to find out how localities would use data provided in a national IC tracking system.

The facilitator asked the group whether an inventory of uses would be beneficial. A participant responded that knowing how localities use the information would enable EPA to refine the national system to fit into existing local information networks.

Another participant commented that people using a map look at markers and signs for direction. Solutions to output problems should be designed like a map so that users can get to the information they need.

Part of the national IC tracking system would involve a change in the way local authorities do business, according to one participant. The success of the system depends upon making the change as small as possible and creating tasks similar to existing duties of local authorities. Using the national flood plain map model is a good idea. That is something that local authorities are already accustomed to using. Designing the national IC tracking system based on concepts in the national flood plain model would likely increase acceptance at the local level.

The facilitator asked if there was a specific action item that could be derived from this comment. The participant replied that the pertinent question is, how did the flood plain model become a standard industry tool? The action item is to find out how the national flood plain map became a standard business tool and design the national system in a similar way.

Another participant added that the national flood plain analogy may not work because flood plains are driven by local regions. ICs are different because they cut across so many areas, whereas a flood plain is related to one. Providing incentives to localities to induce their participation is a better approach.

One participant attempted to translate the national flood plain idea into an action item: EPA could use the national flood plain model and modify it for use as a national IC tracking system. There may be lessons for the flood plain model that could be used in the development of an IC tracking system. Another participant added that VISTA could be another model to look at.

The facilitator asked the group if discussion was complete on this issue. If so, then the group would proceed to number 14. A participant asked whether action items were developed for

number 2. Another participant said that developing an inventory of users is an action item for output problem 2. A group member said that developing a complete list of users would take a too long; posting data should not be delayed while a user list is under development. Another participant agreed and commented that developing a users list is not the most important thing for output purposes.

The facilitator said that the objective of the breakout session was to identify the most important output issues; EPA needs to bring focus to this work.

A participant commented that a pivotal issue whether it is necessary to know every user group. Identifying every kind of user would take a long time; however, identifying common users could be accomplished in a relatively short amount of time.

The facilitator brought the group back to number 2. He asked the group to think about ways to identify what user groups want. What are the possible barriers that could prevent user groups from using the network.

EPA has made a good effort to identify user barriers through focus group meetings, according one group member. Another participant suggested using IC Light as an test model. EPA should ask users what changes they would like to see in the IC Light system as a way to seek development guidance.

One participant suggested conducting a survey on data categories and other tracking issues at the Brownfields conference. Attendees could be asked which data elements are important to their work. Another participant added that the survey could ask attendees to identify problems with the 34 data elements identified as important by the focus groups. The process to date has concentrated on determining what users want. A survey could be used to verify those findings and to ensure that the 34 elements satisfy the needs of potential users.

A participant suggested holding focus groups at national environmental meetings. There needs to be more effort to reach out to organizations that have not engaged in the discussion on a national IC tracking system. There are five or six critical groups that have not engaged.

A representative from CPEO offered to post categories identified as important during IC tracking systems meetings on the CPEO web site. He also suggested a web page survey.

The facilitator asked whether a web survey was possible. An ICMA representative said that a web survey could be conducted through ICMA's www.LUCS.org web site.

A participant said that focus group meetings conducted thus far have been aimed at building consensus. What has happened during focus group meetings has been more like information sharing rather than consensus building. It was noted that the focus group he attended only included three people. The participant added that risk was a key data category among all three attendees of that focus group. Yet, risk was not included in the final list of core data categories.

Clearly, consensus was not reached on data categories.

The facilitator commented that EPA needs to communicate with likely users to determine exactly what information on ICs they need.

A participant suggested a pilot effort as way to see how users react to an IC tracking system. A regional pilot effort would be a good starting point as opposed to implementing a large national system. Lessons learned from a regional effort could be used to shape a national system.

The facilitator asked whether a pilot effort is related to outputs. In response a participant said that a mini test network would identify critical output issues.

A participant from the State of Oregon said that the City of Portland is developing an IC tracking system for Brownfields. He suggested using that system as a test pilot for a national system. On this point, a participant commented that a system for a city would not be a good model because it would provide no information on rural areas. Another state participant suggested using the New Jersey system as a pilot because it addresses rural and metropolitan areas.

The facilitator asked the group to consider ways for making information available to user groups.

A participant commented that easy to read, standardized reports should be incorporated into the national system. Another participant suggested that data in the national system should be made available to field inspectors through hand-held technology.

A participant suggested developing an advertising campaign spread the word about information available on the national system. One-Call has a good public relations approach that should be looked at as a model. Maybe an acronym could be developed to easily identify the national system.

A participant said that contacts for system administration should be provided. Also, a wizard-like tool would be helpful for users who want to download information. In other words, provide a tool that enables users to access an executable query engine in various data sources. It would be less technical than a GIS-based system and allow a user to do key word searches. A participant asked whether databases could be examined directly from a web site. In response, a participant said that some of the databases would only be accessible for queries. A person unfamiliar with the system could do limited queries through pre-set reports.

The facilitator said that these comments were all assuming the system was web-based and users had web access. Should other ways be provided to access information?

A participant suggested that there could be a dial-up system to get general information on ICs. The participant said that his department sends reminder notices to people who own land with ICs. The notices inform the property owner that further information on the IC is available on the department's web site. Personnel changes create problems for IC monitoring. We want people

to be aware of ICs and to be looking for them. A participant suggested that an annual e-mail reminder could be made a part of the national system. A representative from Washington State said that IC alerts are good and should be sent to more than one place. The system alerts could also help excavators who need to be aware of IC restrictions. A participant asked how output could be incorporated into the idea of having alerts?

One participant noted that these ideas are related to getting information from the system to the user. There also should also be a way to allow field inspectors to get information from the field to the system. Field inspectors often have important, time sensitive environmental information related to ICs.

A participant asked how emergency responders would know if an IC is breached? An emergency number should be provided on a national tracking system web site.

The facilitator asked what users should see when they log into a national system? A participant commented that it would be helpful to allow users to see a menu with reports that can be downloaded. There should be a way to translate information into standardized reports. Another participant commented that EPA's plan is to make a centralized database of existing IC databases. An EPA consultant disagreed with this characterization of the network of individual tracking systems that EPA is developing.

A participant suggested that the discussion should be about solutions to output barriers, as opposed to ideas on the design of the site.

The facilitator asked whether output format is a major barrier to developing a usable national system. He suggested that a discussion on format might be too detailed. A participant said that it was important to discuss how the site would look when users log in because parties are concerned about this issue.

The facilitator asked whether there were other issues to discuss beyond how information should be formatted.

One participant stated that translation between different languages was an important issue. It is important to make sure that data categories accommodate each user. BRIMS could be used as a model for making information customized for different users. A comment was made that it would be important to have an index of sites so that users can quickly find a specific area. There should also be a map component to the national system. On this point, a comment was made that creating maps would be difficult because many localities do not have maps with IC details. Another participant responded that sooner or later maps will be available everywhere. In anticipation of this, the system should be designed so that maps can be incorporated.

A group member suggested that any design plan should be tested with novices. A well-designed system would enable a novice to access needed information in a short amount of time.

The facilitator moved the group discussion to data quality.

A participant asked what data quality means for outputs? He also asked how a user could evaluate data quality unless a form was provided for purposes of checking data quality?

The facilitator asked what steps a data quality officer needs to take to ensure quality data? Standardized metadata was suggested, so that one source could be compared to another. The participant added that the source for each data category also needs to be identified. A contact person for each data category should be provided.

A participant suggested providing a form to data providers so that their information could be translated into a common system language. This would operate like a crosswalk table in each data category. The form would enable automatic translation into a common language.

The facilitator asked what the action item would be for development of a crosswalk data translation form?

A participant suggested the first step would be asking data providers whether they are willing to connect data categories to a national system. That would solve the transparency issue.

The facilitator asked if there were any more comments on data quality.

A participant expressed that there should be some data quality objectives.
The facilitator asked who was responsible for data quality objectives. In response, a participant said that data quality objectives are defined during the development phase. Development of a database includes data quality objectives; states who have IC tracking systems will have to start working on data quality now rather than later.

Another participant suggested having a discussion on data standards. Standards are needed for determining how frequently data is updated and information needed for data updates. The process involves identifying data owners and their role in providing data.

A group member noted that it is important to decide whether the national system should be designed to do program evaluation; current plans seem to make it more of an informational system as opposed to a research tool.

A participant said that there should be information on IC implementation, completion and removal. The data could show that an IC was removed and provide a complete history of what happened. This information could be added to site history. It is also important to know if site cleanup standards change.

The facilitator asked the group to come back to discussing the purpose of the national system. He asked the group if the purpose of the system needs to be clarified. Several comments suggested that it is impossible to know what information is needed if the purpose of the system is

unclear. He asked the group to clarify the purpose of the system and the following comments were made concerning purpose:

- The purpose of the system is related to community users. A national tracking system should meet the needs of communities.

- The purpose of the national system was made clear during the morning plenary session. EPA wants to track ICs in order to ensure that they are implemented and to determine if ICs are effective means for protecting human health and environment.

- EPA is going to have its own system to ensure IC implementation and effectiveness. Therefore, the national system should have a broader purpose.

- The purpose of the system should be to provide quality information on ICs at contaminated sites. The users would ultimately decide how the information is used.

- The system should not be an enforcement tool because that would create a negative perception. Participant in the system would be limited if the system were used for enforcement purposes.

The facilitator summarized the action items for the output problems discussed by the group.

Inputs Breakout Session

The following participants attended the input breakout session. The session was facilitated by Lori Maher.

Lori Maher, DPRA
Tim Kent, Quapaw Tribe of Oklahoma
Brooks Koenig, Oregon Department of Environmental Quality
J. Thomas Leaver, Pennsylvania Department of Environmental Quality
Bob Fitzgerald, EPA Region 9
John Frisco, EPA Region 2
Gary Behrns, Missouri Department of Natural Resources
Ned Burke, City of Denver

It was determined by the group that the following categories were the seven most frequently mentioned issues that will be encountered as barriers, or "roadblocks":

- T - Type (Structured/Useful/Consistent)
- O - Ownership/Responsibility/Input/Link
- Q - Verification (Quality and clarity)
- F - Flexibility

- U - Updating
- S - Stakeholder input/outreach
- C - Cost
- R - Outreach

Many participants in the open discussion emphasized that the data should be owned by the sharing member, and should not be able to be tampered with by an outside user. For each field, there will probably be a "preferred provider" by which the information will be imported and updated. Agreement was expressed among group members that the information should be "linked but locked."

The preferred provider should include a description of the property covered by the institutional control to establish the area of contamination. This can be obtained from a decision document. If EPA is the best organization to update the field, than it should be EPA. In addition, the owner of the field should be responsible for the metadata.

There was a list generated of concerns from the open forum. The group categorized each of the items according to the list above.

1. [T] What goes into the system has to be in a form that is defined and useful to the users
2. [V] Good connection between what an IC is and what the system says it is
3. [T] How to deal with structured and unstructured data
4. [F] Record multiple ICs
5. [O] Need for ownership/responsible organization/data that takes precedence
6. [O] Link to existing systems when possible
7. [S] Continue stakeholder input
8. [O] Final arbitrator of entered data
9. [Q] Data verification and quality
10. [F] Structure database flexible to provide to different data providers
11. [Q] IC input help to be clear and ensure IC works
12. [U] Update data
13. [C] Funding cost
14. [F] Data inconsistency/variability
15. [T] Common definition of location
16. [F] Flexibility needed to allow for changes in statutes
17. [Q/S] Create a benefit to local owners
18. [T] Define data values and associated metadata
19. [S] Volume of local users
20. [R] Educate and inform local users (tensions between redevelopment and protection of human health)
21. [O] Potential legal risks regarding data input
22. [O/F] Gather/input historical data
23. [O] Who enters the data and convenience to enter data
24. [O] Those closest to data responsible for data input

Many of the items raised during the open forum were repetitive, so the group streamlined the list and decided to concentrate on three items: Ownership, Cost, and Stakeholder input. The participants felt that the other items on the list were political in nature or dealt with resources. One participant said, "Simply put, you either have the resources or you do not."

Cost

This was identified as the biggest barrier to the system. There was confusion within the group regarding the scope of the project and the costs that each stakeholder will have to bear in order to participate. However, the tracking system is best described as an intersection of other systems that will eventually involve other cleanup programs (RCRA, Brownfields, etc.). The system will link to other tracking systems as well as having information populated by EPA itself.

The participants wanted to make sure that there was consistency between the translations of data elements for all the systems as a starting point. The system should also be scaled back in its initial stages, and as uses increase the range can grow as well.

The costs of entering information into the network break down into a tiered structure of reporting costs including:

- costs where data do not exist;
- costs where data do is exist but are not automated (including historical backlog); and
- costs where the data exist and are automated.

The system can either be created from scratch or can comprise old systems that are modified. There should be some allotment of data manipulation.

The group agreed that there are two ways to manage the information costs: to obtain more resources or to decrease expectations. It should be noted that if the data do not exist, no amount of resources will capture it. This is a realistic impediment to tracking ICs that must be acknowledged.

Solutions identified include trading quality, quantity, and depth of detail for cost. Each stakeholder participates to the degree that they can afford. Furthermore, participants suggested tracking the common data elements that exist in IC tracking systems used by states and municipalities already in existence. This linking to databases would require only the labor costs of removing firewalls and similar actions; the data already exist.

Another solution is the allocation of Brownfields Subtitle C Money. The funds allotted in this legislation can be used to develop a database, but the legislation requires a mandatory tracking of ICs. There are $50 million available for this purpose. Information on the availability of these funds was distributed the week of October 21, 2002.

There have been some stakeholders that have "stepped into the ring" and offered their assistance. For example, ALTA has offered to share data in approximately 10-15 data elements. They have offered to do this because they recognize the potential of this database for retaining information

that would reduce their liability exposure. Another stakeholder that can be approached is the banking industry. However, only larger banks would have information like this available for sharing.

Another solution is rooted in the original funding of the Superfund Program: the polluter pays. In the past, the RPs had to pay for remediation at a site. However, involving RPs brings a potential problems with data ownership and data quality issues.

This also means that there will be more stakeholders providing more data, which increases the chance that there will be inconsistencies in the data.

Stakeholder input/outreach

These issues are more management or "political issues." There will be a continuation of stakeholder input and incentives, as well as an increase in the volume of local users. These issues cannot be fixed because they are upper management issues.

The issue of creating incentives for stakeholders was raised. Besides grants from the federal government, there have been previous examples of other stakeholders (*e.g.,* industry) that can use the database to help them in business practices. In the case of industry, it would help if the database were able to anticipate needs from a system and then cater it to these needs to motivate industry to participate.

Another issue is to get the information to the right people at the right time. This will involve outreach and education programs (like fact sheets, public meetings, or coloring books). This information may create an incentive for the stakeholder to participate even more. The data needs to reach the public to increase awareness and thereby keep the remedy from being breached. This effort will be immediate and ongoing throughout the life cycle of the IC Tracking System, and the level of sophistication of the outreach will be geared toward the level of sophistication of the user.

It was pointed out that some NGOs specialize in outreach to their constituent groups, and their methods or services should therefore be used. Also, EPA funds universities for education extension services, and can also be used as an education outreach tool.

Ownership

The information would be accessed but left under the ownership of the source group. The issue of "link and lock" has already been envisioned in the formulation of the system. The ownership accountability of the data elements should be kept by the owner of the data. It is suggested that all of the information available on one site be contained within the database, so that the user can decide what is the most accurate source of information depending upon their needs. However, the user should be made aware of the potential inconsistencies within the database. Other data inconsistencies will probably be worked out along with the cost issues. In addition, there should be capabilities for data harvests from all of the participating sources.

Some participants felt that data inconsistencies can be fatal in a system like this one because they are often descriptive in nature, and descriptive elements can vary widely. For example, there can be multiple descriptions of site locations for any given site.

It was felt that the best source for the information in the system will be EPA, for the most part. The data should be imported by the same project officer who is responsible for the site. An EPA consultant explained that NPL sites will be tracked primarily by EPA, and he drew a Venn Diagram of the National IC Tracking System network that appears on the page of the focus group IC Tracking System Concept Paper. This helped participants in the input breakout session to envision the decentralized nature of the National IC Tracking System Network that EPA would like to develop.

There should also be a disclaimer regarding the metadata. The metadata will vary widely, so if there are no disclaimers for each data source's metadata, then the site is useless. The network will have to take on some form of legal responsibilities, so there should be some requirements that account for validity and accuracy. It is anticipated that this responsibility will discourage some stakeholders, however.

Third Day

Plenary Session

At the beginning of the third day, representatives from each breakout session were asked to present the findings of their breakout sessions to the Workshop Participants.

The following tables display the each breakout session's work product, including a column labeled "Who." This column has commitments and contact information from participants in the workshop who will help move EPA towards the National IC Tracking System.

Inputs Action Planning

Need	Action	Time frame	Who (Yellow Post Its) Overall post it: Present this info at 12/3/2002 ASTSWMO meeting; ASTSWMO wants to assist.
Problem: It will cost money to get data for input into IC tracking system; how can funding be obtained?			
Need funding for the cost of getting data (for input) that does not exist or data that needs to be re-created	Outreach with BF funding to States so they can afford to populate tracking systems with data	Mid-Term	• EPA/OBCR will award funding after competition; Greg Jordan as liaison • Oregon to enhance BF IC tracking with grant request

Need	Action	Time frame	Who (Yellow Post Its) Overall post it: Present this info at 12/3/2002 ASTSWMO meeting; ASTSWMO wants to assist.
Need funding for the cost of getting existing data that is not fully automated	• Outreach with BF funding	Near-Term	• EPA/OBCR will award funding after competition; Greg Jordan as liaison
	• Investigate whether we need a financial assurance fund for indefinite operation of IC tracking systems	Mid-Term	• Find financial assurance that database will outlast the life span of any institutional control (Volunteer unidentified)
Problem: It will cost money to get data for input into IC tracking system; how can funding be obtained?			
Need Funding for the cost of getting existing automated data	Approach commercial interests and NGOs for data who stand to gain from the network	Mid-Term (After the system is more developed)	• Wisconsin will contact ALTA, National Association of Realtors, National Association of Industrial and Office Properties, and National Association of County Recorders
			• ICMA will design an outreach plan for meeting with strategic NGOs, Big 7, and private sector players in the Smart Growth Network
			• PA DEP's Information Technology people to contact Mike Bellot regarding the PA system
			• Include more environmental organizations
			• Use NGOs that specialize in outreach to their constituent groups
			• Use EPA funded universities for extension services and outreach tools
			• Contact Rich Engel

Need	Action	Time frame	Who (Yellow Post Its) Overall post it: Present this info at 12/3/2002 ASTSWMO meeting; ASTSWMO wants to assist.
Need way to make Responsible Parties pay for data input to IC tracking system	Gain Legislative Authority through interpretation or new or amended authorities	Near-Term: (Examine authority)	• EPA will develop a cost evaluation guidance
		Mid-Term: (Seek or amend Legislative authority)	• EPA will make agreements with PRPs to pass these costs from locals & states to PRPs.
			• Anyone promoting (rather than observing) the Uniform Conservation Easement model (Alper?)
			• State, local, tribes
Problem: If different fields will have different owners; how can responsibility for data input and ownership be clarified?			
Need education and outreach to potential tracking system users	• Hold small stakeholder meeting to develop a marketing strategy	Near-Term and ongoing	• Missouri will hold a stakeholder meeting to determine marketing scheme
	• Provide grants	Near-Term and ongoing	• All
	• Host public meetings and one-on-ones	Near-Term and ongoing	• All
	• Develop tools (*e.g.*, Coloring Books)	Near-Term and ongoing	• All
Need to build a system that allows continued ownership at appropriate levels	• Use Disclaimers		
	• Focus on links not data dumps into system that could be altered		
Need incentives for local data collectors to become owners and providers			• ICMA (Borak) will present the need for developing these incentives at its annual conference and its GIS Consortium Meetings. They can bring NACO, NLC, and mayors to discuss
Need to pose questions to stakeholders like the local data owners to determine their need for data	• Approach NGOs		• George Klein, NJ • EPA • States • Locals • Tribes
	• Approach County Health Offices, etc.		

Need	Action	Time frame	Who (Yellow Post Its) Overall post it: Present this info at 12/3/2002 ASTSWMO meeting; ASTSWMO wants to assist.
Problem: How can we resolve data inconsistencies if different parties will be responsible for different fields in the EPA IC tracking system?			
Need guidelines to resolve data inconsistencies by agreeing in advance upon the authoritative source of certain data, and letting that data trump the inconsistent data (*e.g.*, first guideline is that EPA data will trump all other data for NPL Sites)	• Feed NPL data from CERCLIS and other EPA sources into IC tracking system	Mid-Term	• EPA
Need to caveat IC tracking system data with a "User Beware" warning – this will help maximize information in the system, as people doing input will share more information if there is less exposure for doing so	• Look at the One-Call System – determine how its caveat is expressed		• Oregon wants to revitalize their one call system
Need a legal opinion identifying the data "responsibilities" for providing anything more than links	• Consult Legal Experts		• EPA will get OGC/DOJ to help with this

Systems Coordination Action Planning

Need	Action	Time frame	Who (Yellow Post-its)
Problem: How can we help stakeholders conceptualize a large, decentralized system?			
Need to clarify a vision of the decentralized nature of the network and system designs	• Describe how the network can meet critical needs for each user group	• Ongoing	• EPA/OERR • George Klein, NJ
	• Promote Venn Diagram from page one of the focus group concept paper	• Short-Term	• EPA/DynCorp
	• Promote concept of Web Rings as link between the existing 26 state tracking systems	• Short to Mid-Term	• EPA/OERR/OBCR • EPA will work on draft requirements

			• EPA will commit to develop IC Light Prototype
Need to develop a prototype pilot	• Create prototype	• Ongoing to Short-Term	• EPA to pilot IC Light prototype
	• Test Prototype	• Short-Term	• Dennis Farrar
	• Analyze results	• Mid-Term	• INEEL/Jake Jacobsen
	• Link existing 26 state tracking systems to the pilot	• Mid-Term	• Use existing databases in 26 states to target prototype and run pilots
	• Add RCRA sites to pilot	• Mid-Term	• Carlos Ago to help add RCRA sites to the IC Light pilot
Problem: How do we identify functional requirements of each of the user groups (i.e., Federal, State, local, public, and private)?			
Need to identify functional requirements of each group	• Research systems that manage data from similar types of business processes (*e.g.*, flood plain insurance)	• Short-Term	• ICMA (Dave Borak) will approach LUC GIS consortium and bring GIS experts for go-spacial functional requirements
Need to standardize data elements and distribute to all states and municipalities	• Distribute existing systems to states and localities that do not have tracking systems	• Short-Term	• George Klein, NJ
			• All stakeholders with existing systems
Problem: How do we populate the system and manage data that are entered from multiple sources?			
Need to track and manage data from multiple sources	• Make the system web-based, which includes web data entry including XL file transfers and data harvesting from other systems	• On-going and Short-Term	• EPA/OERR
			• Roy Tan, Parsons Corporation
			• Arnold Gray, Earthsoft

Outputs Action Planning

Need	Action	Timeframe	Who
Problem: How can we better define output and anticipate the needs of system users?			
Need to identify groups of stakeholder-users to ensure that they become familiar with the IC tracking network, its purpose, and its output terms **Diverse users will need to understand the significance of data and how outputs can be used to protect human health and reduce liability**	Provide standardized language for data elements that are common to all user groups	Near-Term	• U.S. EPA will lead, with ongoing input from stakeholders • R. Stout will provide data quality analyses on metadata elements in the MO system • Purpose of system outputs is to provide accurate information on ICs at contaminated sites, to ensure that ICs are working to protect human health and the environment
	List and verify user groups; develop a list of primary users in order to tailor data output to their needs	Near-Term	• DynCorp will compile user group data • Do not promote network as an enforcement tool or as a basis for natural resource damage claims
	Create a "crosswalk" (vertical feed from local to federal government) that translates data elements between systems (*e.g.*, one function would translate jurisdiction-specific terms into shared language)	Near-Term	• EPA/Major Database Owners/Consultants • R. Stout (MO) will develop a crosswalk of MO SMARS database to prepare for data sharing • J. Swartwout will work with Koon Tang to develop a crosswalk for NYDEC tracking system This is important for data element definitions that may necessarily vary between jurisdictions
	Help stakeholders to and conceptualize the tracking network and its outputs; facilitate a mental picture of the system design and layout using graphic picture, etc.	Near-Term and ongoing	• EPA will continue this effort • Bob Hersh will create a short, simple schematic handout describing system design options for the non-IT specialist

Need	Action	Timeframe	Who
	Solicit feedback from stakeholders as to the level of data uniformity, detail, and quality that is needed for their purposes, in order to clarify data output	Near-Term and ongoing	• U.S. EPA with lead staff from developers, state and local land use staff, realtors and lenders • Data Quality: R. Stout (MO) has data quality analysis on data elements & metadata
	Output should be location-based and GIS specialists should define the structure		• U.S. EPA will define GIS-related outputs of tracking system with appropriate GIS staff • U.S. EPA will use appropriate GIS expertise from within (OEI) and outside (FGDC) EPA.
Problem: What purposes will the output serve and what is the best format to serve those purposes?			
Need to present output in a format that is useful for a diverse group of users	Develop a system and web site that allow users to customize the format of the data output to suit their specific needs	Near-Term	• U.S. EPA will review Region 6 Web BRIMS for reference and example
	Create an index and menu to direct users to essential information	Mid-Term	• DynCorp is developing this functionality
	Provide users with a map component in the database where maps are available		• Contact Dave Wolf, U.S. EPA • Contact John DeFina, NJDEP GIS-IMS • DynCorp is planning a GIS/aerial map component
	Assess priority and sequence of content in database design (i.e., what comes first: maps, textual data, or data elements?)		• Contact Dave Wolf, U.S. EPA, GIS-IMS • Contact John DeFina, NJDEP, GIS-IMS
Need to ensure that output is adaptable to specialized use allowing for seamless incorporation into relevant business and regulatory processes	Hold meetings and continue discussions with stakeholders Develop a list of primary users with specialized professional or regulatory requirements so that data output can be tailored to their needs		• All stakeholders • ICMA willing to host a conference call or meeting to clarify the priorities of various end users

Need	Action	Timeframe	Who
Problem: How can we ensure that the right people get the right data, when it is needed?			
Need targeted outreach to four identified types of user groups to convey the importance of utilizing the IC network to review potential land use sites, e.g., before issuing permits to build or drill **The four targeted user groups are:** • **Property transaction community (*e.g.*, lenders & ASTM Phase I)** • **Local planning and permit writers** • **One Call/Utilities community** • **First responders (Haz mat, FEMA)**	Create a system that allows local IC tracking authorities to interface with the national network using their existing systems (*e.g.*, Terradex, Inc. system integrates the LUC database with local permitting processes)	Mid-Term/Long-Term	• U.S. EPA
	Create an index of existing IC databases so that users are aware of available information	Near-Term	• EPA/ICMA's www.LUCs.org
	Design the system so that data formatting is flexible	Long-Term	• INEEL designing large relational databases; Jake Jacobsen willing to help
Need to modify procedures for certain land use actions to ensure awareness of existing ICs, in addition to current checks for asbestos and lead paint **The following need procedural modifications to require IC network checks:** • **Property transaction disclosures** • **Phase I requirements** • **Real estate lending,** • **HazMat response,** • **One Call** • **Excavation crews**	Pursue marketing strategies to encourage major user organizations to become partners in the network, emphasizing benefits	Near-Term	• All • Oregon DEQ would like to expand current multi-jurisdiction tracking effort • ICMA will continue and possibly expand outreach to local authorities, and solicit feedback about network design and action plans
	Conduct inventory of users and find out how they could incorporate the database into their current business practices	Near-Term	• All

Need	Action	Timeframe	Who
	Use the national flood plain, radon, asbestos, or lead paint models to illustrate how the IC network can fit into existing business practices, as do these other environmental concerns		INEEL Yellowstone Research Initiative
Need to verify user requirements; what do stakeholder groups want from the network?	Create and test a prototype, or "mini-" network, like IC Light; analyze feedback from pilot test	Near-Term	• ICMA interested in helping design and manage a Regional IC Tracking and Management Pilot • Oregon would like to work on a pilot system with U.S. EPA, ICMA, and regional local jurisdictions • Wisconsin One Call Pilot; Don Bruce to help
	Hold national meetings with user groups to discuss their needs from an IC tracking network	Near-Term	• Wisconsin One-Call Pilot • Maintain focus on the objectives of ICs; identify contamination, location, and how to prevent exposure
	Use the November 2002 Brownfields Conference to conduct an informal survey of user needs, including feedback on what is missing from the 30 current data elements	Near-Term	• ICMA will highlight the results of these workshops at IC Educational Panels and Marketplace of Ideas during the Brownfields Conference • Rich Engel • Oregon would like a one-year follow-up at the 2003 Brownfields Conference
	Conduct new focus groups at national annual meetings to engage organizations that have not yet participated in the network's development	Near-Term	• ICMA will design an outreach strategy to engage national NGOs for State and Local Government and Smart Growth Network
	Conduct a web survey to determine which data elements are the most important for user groups; partner with organizations to post the survey on their web sites	Near-Term	• ICMA (Borak) will post survey on www.LUCs.org • Willing to use CPEO list-serve to distribute the survey and post results (Contact: Bob Hersh)

Need	Action	Timeframe	Who
Need to emphasize incentives and benefits for utilizing IC tracking system as a job tool, to encourage stakeholders to routinely utilize the IC tracking system	Reach out to: • Property transaction community (*e.g.*, lenders & ASTM Phase I) • Local planning and permit writers • Environmental groups • One Call/Utility community • HazMat response/FEMA	Near-Term and ongoing	• ICMA will host summit for clarifying the priorities and necessities of the various end users of IC tracking network • MGP • PRPs • Corporate Ownership Risk Management Divisions • OR would like to revitalize its One Call Pilot
Problem: How will information outputs be made available to users?			
Need to develop and promote means for making IC network data outputs available to users	Share U.S. EPA's IC Light with user groups	Near-Term	• EPA/OERR
	Consider a dial up access system (one-call) in addition to a web-based system	Mid-Term	
	Develop easy to read, standardized reports	Mid-Term	
	Make system easily accessible for field work	Mid-Term	
	Provide users with a link that enables them to input new information	Mid-Term	
	Develop an educational marketing campaign to encourages stakeholders to utilize the network	Mid-Term	
	Provide users access to a web manager who can assist with specific system questions	Mid-Term	
	Provide an executable query engine that allows users to search network data	Mid-Term	• Please include tribes
	Design the system with "tickler file" to periodically generate alerts and/or letters to jurisdictions where an IC exists, and remind the user of the IC monitoring requirements	Mid-Term	

Need	Action	Timeframe	Who
Problem: How will data quality be ensured?			
Need to determine effect of data quality on data outputs	Develop a data quality plan that includes: • Plans for standardized metadata • Data source identification and contact information • Identification of data owners and their responsibilities • Data standards	Mid-Term	• John DeFina and George Klein
	Develop data quality objectives for output (input issue)	Mid-Term	

After reviewing the inputs/system/outputs sessions action plans, participants were directed to walk around the room and look at the action plans to see if there is anything they can do to help with any particular item, or if they know anyone that can be contacted with expertise on any particular item. The participants were directed to write the information down on yellow post-it notes and place the post-it note next to the action plan item the information on the post-it note relates to. The action plans would be synthesized into an action plan document that would include the post-it note information.

Mr. Bellot spoke to the attendees to impress upon them the importance of their commitment to this effort. The attendees were asked to view themselves as the "IC network," with each member taking the idea of the IC tracking system with them out into their communities to present and drum up support for the creation and maintenance of this network. Mr. Bellot is willing to trouble shoot so that participants continue to have input into the process (*e.g.*, conference calls so that participants with tight budgets do not have to travel to participate).

This workshop will help EPA create a time line for the IC Tracking System project schedule. EPA's IC Lite has already been designed and will be going through the pilot stages shortly, but the bigger tracking system has only been conceptually spelled out. Now, EPA has the steps to implementing the tracking system identified, and an action plan can be created.

EPA will be committing themselves to several issues. First, the summaries of the focus groups and the workshop will be available to the public on EPA's web page in the near future. EPA will then synthesize the vision, objectives, and requirements to build in IC network that have come out of this workshop. This information will come from each focus group, this workshop, and the IC survey that EPA sent out earlier this year to other key stakeholders. EPA has committed itself

to getting IC Lite into a pilot project. The IC Lite system has 35 data elements that EPA has identified as the most important to track. EPA is willing to make the tracking system available to the stakeholders for their review. Eventually, the IC Lite tracking system will be formatted to track ICs at all EPA cleanup programs (USTs, brownfields, etc.) Finally, EPA would like to host a conference on ICs next summer or fall.

In addition, EPA will be creating new guidance for EPA officials on ICs. The first guidance is a monitoring and enforcement guidance which will be sent out to the regions for review in the near future. The second guidance will be on ICs in communities, and the third will be on IC implementation plans. EPA also has interest in a cost guidance. They need to find expertise in identifying costs, and how and by whom ICs are payed for in all stages. This information will include the cost of adding sites to the one-call system.

Some other ideas that EPA is thinking about in the long term is developing a two dimensional bar code that is located on the property. This bar code can be scanned and will link to IC information on the property. However, this is a long term possibility.

In reviewing the results of the participants commitments to the process via the post-it notes, Mr. Bellot noted that there seemed to be a lot of overlap in concerns in the inputs/systems/outputs sessions. However, each group has identified important actions to take that will become functional requirements in the IC tracking system action plan.

Some of the participants felt that it would be prudent to use the upcoming Brownfields Conference as a forum to outline available brownfields funds that are pertinent to ICs.

Participants wanted to know what IC Lite looks like, so Mr. Bellot took some time to outline some of the specifics of the pilot. It is similar to the CCTS system. The database will be populated as the IC implementation plan is created and carried out. It will be offered to the state, local, and other federal agencies for their use.

Participants also pointed out that the most important step in making the IC tracking system come to fruition is to do a lot of public outreach and education. This outreach will have to be done by all of the stakeholders, and will be coordinated in conference calls. ICMA will add a list serve on www.LUCs.org, which will assist stakeholders in getting a hold of one another. Additional information can be found on EPA's website, www.epa.gov/superfund/action/ic/index.